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(54) Self-inflatable liferaft with beacon

(57) A self-inflatable liferaft (1) carries, on or close to an inflatable support (6) for a canopy (5), a radio distress beacon (8) of which transmission is initiated automatically, when the liferaft is cast in the sea and inflated, by withdrawal of a pin 10 by a pull-cord 13 extending, through a guide ring 14, from an anchorage (15) on a buoyancy ring of the hull of the liferaft.

FIG. 1

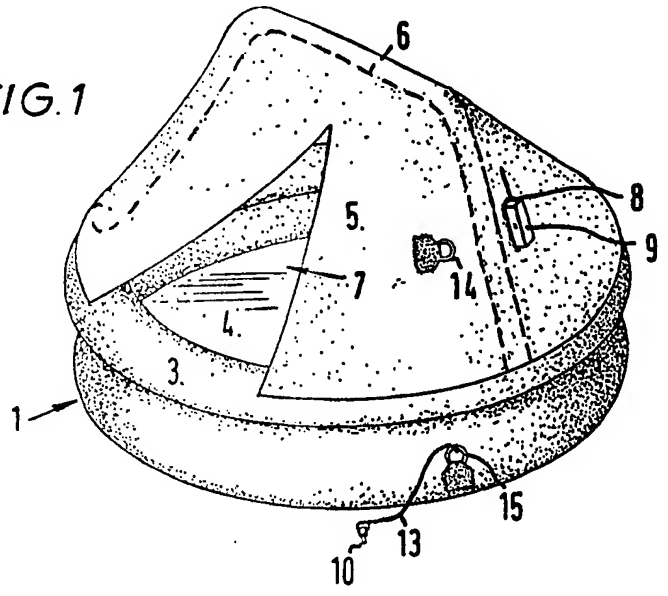

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FIG. 1

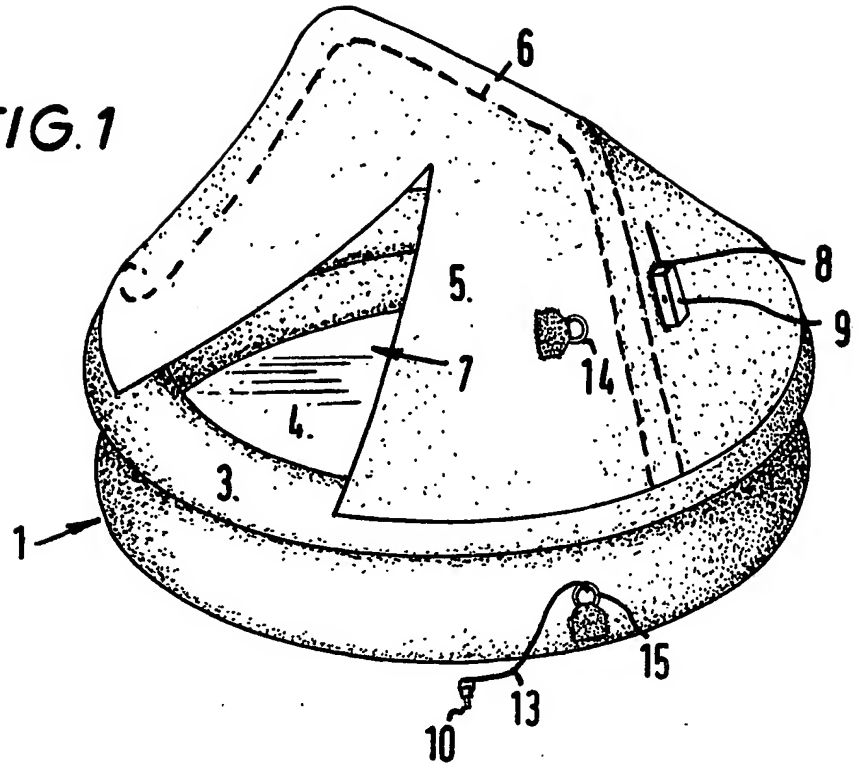


FIG. 2

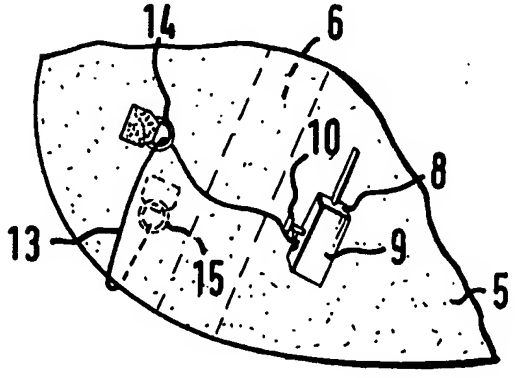


FIG. 3

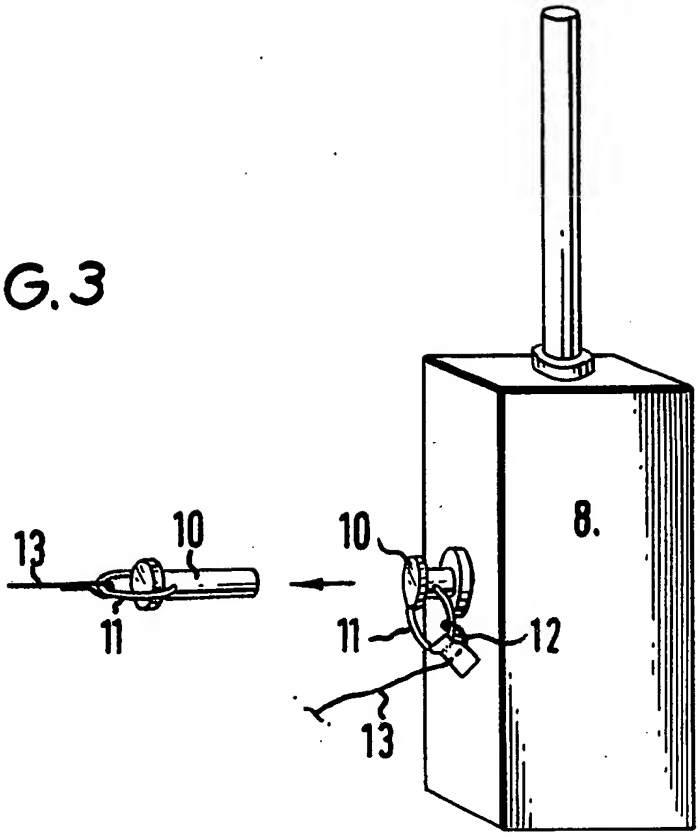
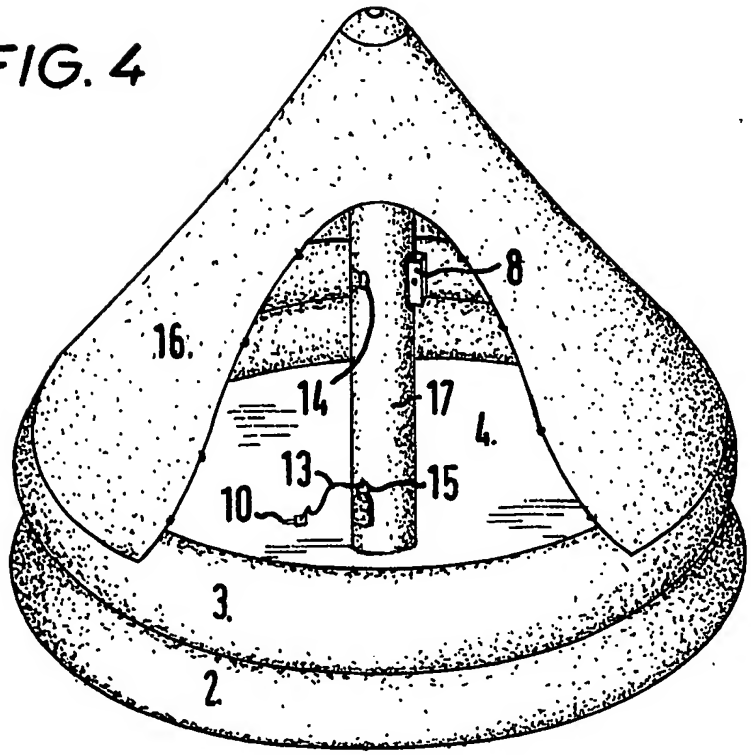


FIG. 4



SPECIFICATION

Self-inflatable liferaft

This invention relates to self-inflatable liferafts which are carried by sea-vessels and aircraft. Each liferaft is compactly stowed, in a container or valise, with a compressed gas cylinder which, when cast into the sea, is actuated to inflate the liferaft.

Such liferafts have ancillary equipment including electrical batteries for lights, and to provide for long life in the stowed condition sea-water activated batteries are commonly used. Battery containers have sea-water admission holes closed by plugs which are tethered by pull-cords to anchorages on the raft, usually across part of an inflatable buoyancy chamber. When the raft is inflated, the pull-cords are tensioned to pull the plugs from the battery containers and admit sea-water to initiate operation of the batteries and thus location lights. Such arrangements have proved satisfactory for emergency light batteries although occasionally it is found that water does leak in and batteries are exhausted when needed.

Liferafts are also equipped with radio transmitters which are manually set in operation, such as by breakage of a seal and withdrawal of a pin. The transmitter then automatically sends a distress call so long as its batteries last, usually about 36 hours. Such transmitters, called radio distress beacons, have been designed for manual initiation and to be hand held by survivors, it being an important aspect of their use that the fact of transmission indicates a liferaft afloat with survivors.

Automatic initiation of radio distress beacons has not been adopted and there are practical reasons for this. Accidental transmission of a radio distress call has the effect of a false alarm, causing search and rescue operations to be commenced and not only wasting resources but reducing the services available for a genuine call. Consequently, the use of sea-water operated batteries, liable to unwanted ingress of sea water, are not acceptable for radio distress beacons. Also, to avoid inadvertent manual operation, actuating means requiring deliberate positive operation are essential.

In considering their use for automatic initiation of a radio distress beacon, the pull-cords used for pulling the plugs from sea-water battery containers have major defects. The batteries are unsuitable, being vulnerable to unwanted ingress of sea-water, the pull available from inflation of the buoyancy chambers is much less than is required for manual operation of a beacon and the location of a beacon on a buoyancy chamber at the sea surface is unfavourable for radio transmission.

Pull-cord operation is however attractive because it is a mechanical operation which can be equated to manual operation. The present invention enables pull-cord operation to be safely and advantageously employed for initiation of radio distress beacons on liferafts.

According to the invention, a self-inflatable liferaft is provided with a radio distress beacon, carried on or close enough to an inflatable support for a canopy so as to move upwardly with the canopy support when inflated, and a pull-cord connected between an anchorage on the liferaft and transmission initiation means on the beacon, so that the pull cord is tensioned to actuate the beacon only when the canopy support is inflated to erect the canopy.

By virtue of the invention, the radio distress beacon can employ any suitable battery, the equivalent of manual initiation of the beacon can be effected with ample mechanicl power, available from the strong upward thrust of the canopy support when inflated, the required extent of operating pull is available by selection of the location of the beacon, the length of the pull-cord and the location of its anchorage, and the raised location of the beacon promotes its effective range.

Above all, the fact that the radio distress call is transmitted indicates that a liferaft has been launched or automatically released. The beacon gives a signal on which a location fix can be obtained and maximum rescue effort is warranted for possible survivors.

Alternative embodiments and other features of the invention, as set forth in the appended claims, are described below and illustrated, by way of example, on the accompanying drawings, in which:-

Figure 1 is a perspective view of an inflated liferaft with a known kind of inflated arched tube canopy support and equipped with a radio distress beacon in accordance with the invention.

Figure 2 is a fragmentary view showing the beacon on the liferaft of Figure 1 in the flat condition, before being folded for stowage.

Figure 3 is a detail view of a suitable beacon and its withdrawable pin for initiating transmission, and

Figure 4 is a perspective view of another inflated liferaft with a known kind of inflated central column canopy support equipped with a radio distress beacon in accordance with the invention.

The liferaft shown by Figure 1 is of a well-known type (made by RFD Inflatables Limited, Godalming, Surrey, England). It has a hull 1 formed principally by two superposed inflatable buoyancy rings 2 and 3 and a flexible fabric floor 4 which is of double skin constructin and may be hand-inflated.

A flexible fabric canopy 5 is supported by an inflated arched tube 6 diametrally spanning the buoyancy ring 3. The canopy has two closable entrances, one of which is shown at 7 and the other being at the opposite side of the raft. Small rafts may have only one entrance.

An equipped liferaft has many other features but only those relevant to the present invention are illustrated.

When ready for use, the deflated liferaft is flattened and folded or rolled compactly to fit in a carrier, which may be a rigid container or fabric valise, in which is stowed also a compressed gas (CO_2) bottle. When cast into the sea, a drag line is pulled to initiate gas inflation which takes place rapidly, first the buoyancy rings 2 and 3 being filled and then the arched tube 6 springing up to support the canopy. The whole operation is completed and the raft ready for boarding in less than 30 seconds.

In accordance with the invention, a radio distress

beacon 8 is carried in a pouch 9 made into the canopy 5 close to one side of the arched tube 6 so that it rises simultaneously with the tube 6 when the raft is inflated. Such upward movement of the beacon above the hull rings 2, 3 is rapid and powerful.

The beacon 8 has transmission initiation means operable by a pull-cord and a preferred beacon, although not essentially, is one having a withdrawable pin 10. A very suitable beacon is that known as the "LOCAT" (Trade Mark) made by Locat Developments Ltd, Wm Wright Dock, Hull, England.

As shown by Figure 3, the pin 10 has a pull-ring 11 which, on assembly, is trapped in an eye of a sealing lug 12 fast with the beacon case, for example a plastics lug welded to a plastics case. For manual operation another pull-ring (not shown) with an instruction tag may be trapped by the sealing lug 12 to facilitate breakage of the seal before withdrawal of the pin 10 to initiate transmission.

A pull-cord 13 is firmly secured to the ring 11 of the pin 10 and is passed through the eye of the sealing lug 12 before being led through a guide ring 14 secured to the canopy 5 at the same level as the beacon pouch 9 and on the other side of the arched support tube 6. From the guide ring 14 the cord 13 passes down to a strong anchorage ring 15 on the buoyancy ring 2.

The installation of the beacon and its pull-cord on the deflated liferaft, before folding for stowage, is shown by Figure 2. This also shows that the location of the beacon is convenient for access during periodical servicing of a liferaft which must be carried out.

From the flat condition of Figure 2, inflation of the liferaft to the erected condition of Figure 1 causes rapid tensioning of the cord 13 and a positive straight line pull, through the guider ring 14, with the result that the sealing lug 12 is broken and the pin 10 withdrawn from the beacon 8 to initiate transmission.

The cord 13 is accessible, from the entrance 7, for retrieval of the pin 10 and the beacon 8 is accessible, from the entrance at the other side of the canopy, if subsequent manual control of the beacon is required.

Figure 4 shows the invention applied to a liferaft having a bell canopy 16 and an inflated central column 17 which erects and supports the canopy.

A beacon and pull-cord assembly, as described above with reference to Figures 1 to 3, is mounted on the column 17 and operates in a corresponding manner when the column is inflated and erects the canopy.

CLAIMS

1. A self-inflatable liferaft having a radio distress beacon, carried on or close enough to an inflatable support for a canopy so as to move upwardly with the canopy support when inflated, and a pull-cord connected between an anchorage on the liferaft and transmission initiation means on the beacon, so that the pull-cord is tensioned to actuate the beacon only when the canopy support is inflated to erect the canopy.

2. A liferaft according to claim 1, in which the pull-cord is led through a guide between its anchorage and the beacon so as to align the cord for a straight pull on the transmission initiation means.

3. A liferaft according to claim 1 or 2 in which the transmission initiation means on the beacon is held against operation by a breakable seal and the pull-cord is led through the seal so that an actuating pull on the cord first breaks the seal and then actuates the beacon.

4. A liferaft according to claim 1, 2 or 3, in which the transmission initiation means on the beacon is a pin withdrawable from the beacon to initiate transmission.

5. A liferaft according to any foregoing claim in which the canopy support is an inflatable arched tube and the beacon is carried in a pouch on the canopy close to the arched tube.

6. A liferaft according to claim 5, in which a guide for the pull-cord is provided on the canopy, level with the beacon but on the other side of the arched tube, and the pull-cord is anchored to the hull at a location below the cord guide in the erected condition of the liferaft.

7. A liferaft according to any of claims 1 to 4, in which the canopy support is an inflatable column, the beacon is carried by the column and the pull-cord is anchored at the foot of the column.

8. A self-inflatable liferaft equipped with a radio distress beacon substantially as described with reference to and as shown by Figures 1 to 3 or Figures 3 and 4 of the accompanying drawings.

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